



16w

I hereby certify that this correspondence is being deposited with the US Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Date: August 6, 2004

By: Kay L. Gaviglio

PATENT
Docket No. GC566-2-C1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application:)	
)	
Jones et al.)	Group Art Unit: 1614
)	
Serial No.: 10/791,093)	Examiner: Unassigned
)	
Filed: March 1, 2004)	
)	
For: CHEMICALLY MODIFIED MUTANT SERINE)	
HYDROLASES SHOW IMPROVED)	
CATALYTIC ACTIVITY AND CHIRAL)	
SELECTIVITY)	

Information Disclosure Statement

Box Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants submit herewith patents, publications or other information (listed on the attached Form PTO-1449 and attached thereto) of which they are aware, that they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR §1.56.

This Information Disclosure Statement:

- (a) ☐ accompanies the new patent application submitted herewith. 37 CFR §1.97(a).
- (b) ☐ is filed within three months after the filing date of the application or within three months after the date of entry into the national stage of a PCT application as set forth in 37 CFR §1.491.
- (c) ☒ as far as is known to the undersigned, is filed before the mailing date of a first Office Action on the merits.
- (d) ☐ is filed after the first Office Action and more than three months after the

application filing date or PCT national stage date of entry filing but, as far as is known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and is accompanied by either the fee (\$180.00) set forth in 37 CFR §1.17(p) or a certification as specified in 37 CFR §1.97(e), as checked below. Authorization to charge Deposit Account No. 07-1048 in the amount of \$180.00 to cover the cost of this Information Disclosure Statement is provided in the Transmittal Letter submitted herewith in duplicate.

(e) ☐ is filed after the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and is accompanied by authorization (in the Transmittal Letter submitted herewith in duplicate) to charge Deposit Account No. 07-1048 the fee (\$180.00) set forth in 37 CFR §1.17(l)(1) and a certification as specified in 37 CFR §1.97(e), as checked below. **This document is to be considered as a petition requesting consideration of the Supplemental Information Disclosure Statement.**

[If either of boxes (d) or (e) is checked above, the following "certification" under 37 CFR §1.97(e) may need to be completed.] The undersigned certifies that:

☐ Each item of information contained in the Information Disclosure Statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☐ No item of information contained in this Information Disclosure Statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Those patent(s) or publication(s) which are marked with an asterisk (*) on the attached Form PTO-1449 are not supplied because they were previously cited by or submitted to the Office in a prior application, Serial No. 09/436,513, filed November 9, 1999, and relied upon in this application for an earlier filing date under 35 USC 120.

A concise explanation of relevance of the items listed on PTO-1449 is:

- ☒ not given
- ☐ given for each listed item
- ☐ given for only non-English language listed item(s)

☐ in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references.

The Examiner is reminded that a "concise explanation of the relevance" of the submitted prior art "may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention." MPEP §609.

While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR §1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

In accordance with 37 CFR §1.97(b), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR §1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 CFR §1.98 and MPEP §609 and the Examiner is respectfully requested to consider the listed references.

Respectfully submitted,



H. Thomas Anderton, Jr.
Registration No. 40,895

Date: August 13, 2004

Genencor International, Inc.
925 Page Mill Road
Palo Alto, CA 94304-1013
Tel: 650-846-7544
Fax: 650-845-6504

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT
(Use several sheets if necessary)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

~~4614~~ 1652

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

EXAM'R INITIAL		DOCUMENT NUMBER	DATE	NAME	Class	Subclass	Filing Date If Appropriate
/WWW/	A1	*5,403,737	04/04/95	Abrahmsen et al.			
/WWW/	A2	*5,629,173	05/13/97	Abrahmsen et al.			
/WWW/	A3	*5,316,935	05/31/94	Arnold et al.			
/WWW/	A4	*5,208,158	05/04/93	Bech et al.			
/WWW/	A5	*5,244,791	09/14/93	Estell			
/WWW/	A6	*5,316,941	05/31/94	Estell et al.			
/WWW/	A7	*5,955,340	02/21/99	Bott			

FOREIGN PATENT DOCUMENTS

EXAM'R INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	Subclass	TRANSLAT'N
/WWW/	B1	*EP 3 328 229 A1	08/16/89	EP			
/WWW/	B2	*WO 00/28007	05/18/00	PCT			
/WWW/	B3	*WO 00/37658	06/29/00	PCT			
/WWW/	B4	*WO 91/16423	04/18/91	PCT			
/WWW/	B5	*WO 96/27671	02/27/96	PCT			
/WWW/	B6	*WO 97/37007	10/09/97	PCT			
/WWW/	B7	*WO 99/20723	04/29/99	PCT			

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C1	*Abrahmsen et al., "Engineering Subtilisin and Its Substrates for Efficient Ligation of Peptide Bonds in Aqueous Solution," <u>Biochemistry</u> , 30:4151-59 (1991)
/WWW/	C2	*Akabas et al., "Acetylcholine Receptor Channel Structure Probed in Cysteine-Substitution Mutants," <u>Science</u> , 258:307-310 (1992)
/WWW/	C3	*Alvear et al., "Inactivation of Chicken Liver Mevalonate 5-Diphosphate Decarboxylase by Sulfhydryl-Directed Reagents: Evidence of a Functional Dithiol," <u>Biochimica et Biophysica Acta</u> , 994:7-11 (1989)
/WWW/	C4	*Barbas et al., "A Search for Peptide Ligase: Cosolvent-Mediated Conversion of Proteases to Esterases for Irreversible Synthesis of Peptides," <u>J. Am. Chem. Soc.</u> , 110:5162-66 (1988)
/WWW/	C5	*Barbas, et al., "Papain Catalyzed Peptide Synthesis: Control of Amidase Activity and the Introduction of Unusual Amino Acids," <u>J. Chem. Soc., Chem. Commun.</u> , 533-34 (1987)
/WWW/	C6	*Bech et al., "Significance of Hydrophobic S ₄ -P ₄ Interactions in Subtilisin 309 from <i>Bacillus lentus</i> ," <u>Biochemistry</u> , 32:2847-2852 (1993)

EXAMINER

/William W. Moore/

DATE CONSIDERED

03/11/2006

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant(s).



U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. GC566-2-C1	SERIAL NO. 10/791,093
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)			
APPLICANT Genencor International, Inc.		FILING DATE March 1, 2004	
(PTO-1449)		GROUP ART UNIT 1614 1652	

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C7	*Bell et al., "Kinetic Studies on the Peroxidase Activity of Selenosubtilisin," <i>Biochemistry</i> , 32:3754-3762 (1993)
/WWW/	C8	*Berglund et al., "Altering the Specificity of Subtilisin <i>B. Lentus</i> by Combining Site-Directed Mutagenesis and Chemical Modification," <i>Bioorganic & Mechanical Chemistry Letters</i> , 6:2507-2512 (1996)
/WWW/	C9	*Betzel et al., "Crystal Structure of the Alkaline Proteinase Savinase TM from <i>Bacillus lentus</i> at 1.4 Å Resolution," <i>J. Mol. Biol.</i> , 223:427-445(1992)
/WWW/	C10	*Bodwell et al., "Sulphydryl-Modifying Reagents Reversibly Inhibit Binding of Glucocorticoid-Receptor Complexes to DNA-Cellulose," <i>Biochemistry</i> , 23:1392-1398 (1984)
/WWW/	C11	*Bonneau et al., "Alteration of the Specificity of Subtilisin BPN' by Site-Directed Mutagenesis in its S ₁ and S ₁ ' Binding Sites," <i>J. Am. Chem. Soc.</i> , 113:1026-30 (1991)
/WWW/	C12	*Brocklehurst, "Specific Covalent Modification of Thiols: Applications in the Study of Enzymes and Other Biomolecules," <i>Int. J. Biochem.</i> , 10:259-274 (1979)
/WWW/	C13	*Bruce et al., "Novel Alkyl Alkanethiosulfonate Sulphydryl Reagents. Modification of Derivatives of L-Cysteine," <i>Journal of Protein Chemistry</i> , 1:47-58 (1982)
/WWW/	C14	*Buckwalter et al., "Improvement in the Solution Stability of Porcine Somatotropin by Chemical Modification of Cysteine Residues," <i>J. Agric. Food Chem.</i> , 40:356-362 (1992)
/WWW/	C15	*Chen et al., "Incorporation of Unnatural Amino Acid Derivatives into a Peptide Bond via an Oxime Ester Catalysed By Papain or Lipase," <i>Chem. Commun.</i> , 165-66 (1996)
/WWW/	C16	*Chen et al., "Kinetically Controlled Peptide Bond Formation in Anhydrous Alcohol Catalyzed by the Industrial Protease Alcalase," <i>J. Org. Chem.</i> , 57:6960-65 (1992)
/WWW/	C17	*Chen et al., "Probing the S-1' Subsite Selectivity of an Industrial Alkaline Protease in Anhydrous t-Butanol," <i>Bioorganic & Medicinal Chemistry Letters</i> , 3(4):727-33 (1993)
/WWW/	C18	*Daly et al., "Formation of Mixed Disulfide Adducts at Cysteine-281 of the Lactose Repressor Protein Affects Operator and Inducer Binding Parameters," <i>Biochemistry</i> , 25:5468-5474 (1986)
/WWW/	C19	*Davies et al., "A Semisynthetic Metalloenzyme Based on a Protein Cavity That Catalyzes the Enantioselective Hydrolysis of Ester and Amide Substrates," <i>J. Am. Chem. Soc.</i> , 119:11643-11652 (1997)
/WWW/	C20	*Davis, B.G., et al., "Altering the specificity of subtilisin <i>Bacillus lentus</i> through the introduction of positive charge at single amino acid sites," <i>Bioorganic and Medicinal Chemistry</i> , (1999 Nov.) 7 (11) 2303-11, XP0000892841
/WWW/	C21	*Davis, B.G., et al., "Controlled site selective protein glycosylation for precise glycan structure catalytic activity relationships," <i>Bioorganic & Medicinal Chemistry</i> , Vol. 8, 2000, pp. 1527-1535
/WWW/	C22	*Davis, B.G., et al., "Glycomethanethiosulfonates: powerful reagents for protein glycosylation," <i>Tetrahedron: Asymmetry</i> , NL, Elsevier Science Publishers, Amsterdam, Vol 11, No. 1, January 2000 (2000-01), pp. 245-262
/WWW/	C23	*Davis, B.G., et al., "Glycosyldisulfides: a new class of solution and solid phase glycosyl donors," <i>Chem. Commun</i> , 2001, pp.189-190

EXAMINER	/William W. Moore/	DATE CONSIDERED	03/11/2008
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance <i>and</i> not considered. Include copy of this form with next communication to Applicant(s).			



U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT
(Use several sheets if necessary)

(PTO-1449)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

~~1614~~ 1652

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C24	*Davis, B.G., et al., "The controlled introduction of multiple negative charge at single amino acid sites in subtilisin bacillus lentus," <i>Bioorganic and Medicinal Chemistry</i> , (1999 Nov.) 7 (11) 2293-301, XP0000892840
/WWW/	C25	*Davis, Benjamin G, et al., "The Controlled Glycosylation of a Protein with a Bivalent Glycan: Towards a New Class of Glycoconjugates, Glycodendriproteins," <i>Chem. Commun</i> , 2001, pp. 351-352
/WWW/	C26	*DeSantis et al., "Chemical Modifications at a Single Site Can Induce Significant Shifts in the pH Profiles of a Serine Protease," <i>J. Am. Chem. Soc.</i> , 120:8582-8586 (1998)
/WWW/	C27	*Desantis, G., et al., "Probing the altered specificity and catalytic properties of mutant subtilisin chemically modified at position S156C and S166C in the S1 pocket," <i>Bioorganic and Medicinal Chemistry</i> , (1997) 7/7 (1381-1387), XP0000892843
/WWW/	C28	*Di Bello, "Total Synthesis of Proteins by Chemical Methods: The Horse Heart Cytochrome C Example," <i>Gazzetta Chimica Italiana</i> , 126:189-197 (1996)
/WWW/	C29	*Dime, DS., "Protein Topology and Ion Channel Research," Toronto Research Chemicals, Inc. (catalog date unknown)
/WWW/	C30	*Ekberg et al., "Enzymatic Coupling of Two D-Amino Acid Residues in Aqueous Media," <i>Tetrahedron Letters</i> , 30(5):583-86 (1989)
/WWW/	C31	*Engler et al., "Critical Functional Requirement for the Guanidinium Group of the Arginine 41 Side Chain of Human Epidermal Growth Factor as Revealed by Mutagenic Inactivation and Chemical Reactivation," <i>The Journal of Biological Chemistry</i> , 267:2274-2281 (1992)
/WWW/	C32	*Frillingos et al., "Cysteine-Scanning Mutagenesis of Helix II and Flanking Hydrophilic Domains in the Lactose Permease of <i>Escherichia coli</i> ," <i>Biochemistry</i> , 36:269-273 (1997)
/WWW/	C33	*Gloss et al., "Examining the Structural and Chemical Flexibility of the Active Site Base, Lys-258, of <i>Escherichia coli</i> Aspartate Aminotransferase by Replacement with Unnatural Amino Acids," <i>Biochemistry</i> , 34:12323-12332 (1995)
/WWW/	C34	*Graycar et al., "Altering the Proteolytic Activity of Subtilisin through Protein Engineering," <i>Annals New York Academy of Science</i> , 672:71-79 (1992)
/WWW/	C35	*Gron et al., "A Highly Active and Oxidation-Resistant Subtilisin-Like Enzyme Produced by a Combination of Site-Directed Mutagenesis and Chemical Modification," <i>Eur. J. Biochem.</i> , 194:897-901 (1990)
/WWW/	C36	*Gron et al., "Extensive Comparison of the Substrate Preferences of Two Subtilisins As Determined with Peptide Substrates Which Are Based on the Principle of Intramolecular Quenching," <i>Biochemistry</i> , 31(26):6011-18 (1992)
/WWW/	C37	*Hempel et al., "Selective Chemical Modification of Human Liver Aldehyde Dehydrogenases E ₁ and E ₂ by Iodoacetamide," <i>The Journal of Biological Chemistry</i> , 256:10889-10896 (1981)
/WWW/	C38	*Hilvert et al., "A Highly Active Thermophilic Semisynthetic Flavoenzyme," <i>J. Am. Chem. Soc.</i> , 110:682-689 (1988)
/WWW/	C39	*Hilvert et al., "New Semisynthetic Flavoenzyme Based on a Tetrameric Portein Template, Glyceraldehyde-3-Phosphate Dehydrogenase," <i>J. Am. Chem. Soc.</i> , 107:5805-5806 (1985)

EXAMINER /William W. Moore/

DATE CONSIDERED

03/11/2008

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant(s).



U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT
(Use several sheets if necessary)

(PTO-1449)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

~~4644~~ 1652

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C40	*House et al., "H NMR Spectroscopic Studies of Selenosubtilisin," <u>Biochemistry</u> , 32:3468-3473 (1993)
/WWW/	C41	*Huang et al., "Improving the Activity of Immobilized Subtilisin by Site-Specific Attachment to Surfaces," <u>Anal. Chem.</u> , 69:4601-4607 (1997)
/WWW/	C42	*Jonsson et al., "Temperature Effects on Protease Catalyzed Acyl Transfer Reactions in Organic Media," <u>Journal of Molecular Catalysis B: Enzymatic</u> , 2:43-51 (1996)
/WWW/	C43	*Kaiser, "Catalytic Activity of Enzymes Altered at Their Active Sites," <u>Agnew. Chem. Int. Ed. Engl.</u> , 27:913-922 (1988)
/WWW/	C44	*Kanaya et al., "Role of Cysteine Residues in Ribonuclease H from <i>Escherichia coli</i> ," <u>Biochem. J.</u> , 271:59-66 (1990)
/WWW/	C45	*Kato et al., "First Stereoselective Synthesis of D-Amino Acid N-Alkyl Amide Catalyzed by D-Amino-peptidase," <u>Tetrahedron</u> , 45(18) 5743-54 (1989)
/WWW/	C46	*Kawase et al., "Effect of Chemical Modification of Tyrosine Residues on Activities of Bacterial Lipase," <u>Journal of Fermentation and Bioengineering</u> , 72:317-319 (1991)
/WWW/	C47	*Kawashiro et al., "Effect of Ester Moiety of Substrates on Enantioselectivity of Protease Catalysis in Organic Media," <u>Biochemistry Letters</u> , 18(12):1381-86 (1996)
/WWW/	C48	*Kenyon et al., "Novel Sulfhydryl Reagents," <u>Methods Enzymol.</u> , 47:407-430 (1977)
/WWW/	C49	*Kirley, "Reduction and Fluorescent Labeling of Cyst(e)ine-Containing Proteins for Subsequent Structural Analyses," <u>Analytical Biochemistry</u> , 180:231-236 (1989)
/WWW/	C50	*Kluger et al., "Amino Group Reactions of the Sulfhydryl Reagent Methyl Methanesulfonylthioate. Inactivation of D-3-hydroxybutyrate Dehydrogenase and Reaction with Amines in Water," <u>Can. J. Biochem.</u> , 58:629-632 (1980)
/WWW/	C51	*Kokubo et al., "Flavohemoglobin: A Semisynthetic Hydroxylase Acting in the Absence of Reductase," <u>J. Am. Chem. Soc.</u> , 109:606-607 (1987)
/WWW/	C52	*Koenigsberg, "Reduction of Disulfide Bonds in Proteins with Dithiothreitol," <u>Methods in Enzymology</u> , 25:185-188 (1972)
/WWW/	C53	*Kuang et al., "Enantioselective Reductive Amination of α -Amino Acids by a Pyridoxamine Cofactor in A Protein Cavity," <u>J. Am. Chem. Soc.</u> , 118:10702-10706 (1996)
/WWW/	C54	*Lewis et al., "Determination of Interactive Thiol Ionizations in Bovine Serum Albumin, Glutathione, and Other Thiols by Potentiometric Difference Titration," <u>Biochemistry</u> , 19:6129-6137 (1980)
/WWW/	C55	*Liu et al., "Site-Directed Fluorescence Labeling of P-Glycoprotein on Cysteine Residues in the Nucleotide Binding Domains," <u>Biochemistry</u> , 35:11865-11873 (1996)
/WWW/	C56	*Lloyd, R.C. et al., "Site Selective Glycosilation of Subtilisin Bacillus Lentus Causes Dramatic Increase in Esterase Activity," <u>Biorganic & Medicinal Chemistry</u> , Vol. 8, 2000, pp. 1537-1544
/WWW/	C57	*Margolin et al., "Incorporation of D-Amino Acids into Peptides via-Enzymatic Condensation in Organic Solvents," <u>J. Am. Chem. Soc.</u> , 109:7885-87 (1987)

EXAMINER /William W. Moore/

DATE CONSIDERED 03/11/2008

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant(s).



U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT
(Use several sheets if necessary)

(PTO-1449)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

~~4614~~ 1652

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C58	*Margolin et al., "Peptide Synthesis Catalyzed by Lipases in Anhydrous Organic Solvents," <u>J. Am. Chem. Soc.</u> , 109:3802-04 (1987)
/WWW/	C59	*Miller et al., "Peroxide Modification of Monoalkylated Glutathione Reductase," <u>The Journal of Biological Chemistry</u> , 266:19342-19360 (1991)
/WWW/	C60	*Moree et al., "Exploitation of Subtilisin BPN as Catalyst for the Synthesis of Peptides Containing Noncoded Amino Acids, Peptide Mimetics and Peptides Conjugates," <u>J. Am. Chem. Soc.</u> , 119:3942-47 (1997)
/WWW/	C61	*Moriyama et al., "α-Chymotrypsin as the Catalyst for Peptide Synthesis," <u>Biochem. J.</u> , 163:531-42 (1977)
/WWW/	C62	*Nakatsuka et al., "Peptide Segment Coupling Catalyzed by the Semisynthetic Enzyme Thiolsubtilisin," <u>J. Am. Chem. Soc.</u> , 109:3808-10 (1987)
/WWW/	C63	*Nakayama et al., "Chemical Modification of Cysteiny, Lysyl and Histidyl Residues of Mouse Liver 17β-Hydroxysteroid Dehydrogenase," <u>Biochimica et Biophysica Acta</u> , 1120:144-150 (1992)
/WWW/	C64	*Neet, K.E. and Koshland, D.E., "The Conversion of Serine at the Active Site of Subtilisin to Cysteine: A 'Chemical Mutation,'" <u>Proc. Nat. Acad. Sci. USA</u> , 56(5):1606-1611.
/WWW/	C65	*Nishimura et al., "Reversible Modification of the Sulfhydryl Groups of <i>Escherichia coli</i> Succinic Thiokinase with Methanethiolating Reagents, 5,5'-Dithio-bis(2-Nitrobenzoic Acid), p-Hydroxymercuribenzoate, and Ethylmercurithiosalicylate," <u>Archives of Biochemistry and Biophysics</u> , 170:461-467 (1975)
/WWW/	C66	*O'Connor et al., "Probing an Acyl Enzyme of Selenosubtilisin by Raman Spectroscopy," <u>J. Am. Chem. Soc.</u> , 118:239-240 (1996)
/WWW/	C67	*Pardo et al., "Cysteine 532 and Cysteine 545 Are the N-Ethylmaleimide-Reactive Residues of the <i>Neurospora</i> Plasma Membrane H ⁺ -ATPase," <u>The Journal of Biological Chemistry</u> , 264:9373-9379 (1989)
/WWW/	C68	*Peterson et al., "Nonessential Active Site Residues Modulate Selenosubtilisin's Kinetic Mechanism," <u>Biochemistry</u> , 34:6616-6620 (1995)
/WWW/	C69	*Peterson et al., "Selenosubtilisin's Peroxidase Activity Does Not Require an Intact Oxyanion Hole," <u>Tetrahedron</u> , 53:12311-12317 (1997)
/WWW/	C70	*Planas et al., "Reengineering the Catalytic Lysine of Aspartate Aminotransferase by Chemical Elaboration of a Genetically Introduced Cysteine," <u>Biochemistry</u> , 30:8268-8276 (1991)
/WWW/	C71	*Plettner, E. et al., "Modulation of Esterase and Amidase Activity of Subtilisin Bacillus Lentus by Chemical Modification of Cysteine Mutants," <u>Journal of the American Chemical Society</u> , (2 Jun. 1999) 121/21, 4977-4981, XPO000891274.
/WWW/	C72	*Plettner, Erika et al., "A Combination Approach to Chemical Modification of Subtilisin Bacillus Lentus," <u>Bioorganic & Medicinal Chemistry Letters</u> (Sept. 8, 1998) Vol. 8, No. 17, pp. 2291-2296, XPO004138220

EXAMINER /William W. Moore/

DATE CONSIDERED

03/11/2008

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant(s).



U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Use several sheets if necessary)

(PTO-1449)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

1614 1652

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C73	*Polgar et al., "A New Enzyme Containing a Synthetically Formed Active Site. Thiol-Subtilisin," <u>Journal of American Chemical Society</u> , 88:3153-3154 (1966)
/WWW/	C74	*Polgar, "Spectrophotometric Determination of Mercaptide Ion, an Activated Form of SH-Group in Thiol Enzymes," <u>FEBS Letters</u> , 38:187-190 (1974)
/WWW/	C75	*Presenting Our Line of MTS Compounds," Toronto Research Chemicals Inc. (catalog, date unknown)
/WWW/	C76	*Radziejewski et al., "Catalysis of N-Alkyl-1,4-Dihydropyridine Oxidation by a Flavopapain: Rapid Reaction in All Catalytic Steps," <u>J. Am. Chem. Soc.</u> , 107:3352-3354 (1985)
/WWW/	C77	*Raia et al., "Activation of <i>Sulfolobus Solfataricus</i> Alcohol Dehydrogenase by Modification of Cysteine Residue 38 with Iodoacetic Acid," <u>Biochemistry</u> , 35:638-647 (1996)
/WWW/	C78	*Ramachandran et al., "Stabilization of Barstar by Chemical Modification of the Buried Cysteines," <u>Biochemistry</u> , 35:8776-8785 (1996)
/WWW/	C79	*Roberts et al., "Reactivity of Small Thiolate Anions and Cysteine-25 in Papain Toward Methyl Methanethiosulfonate," <u>Biochemistry</u> , 25:5595-5601 (1986)
/WWW/	C80	*Rokita et al., "Synthesis and Characterization of a New Semisynthetic Enzyme, Flavolysozyme," <u>J. Am. Chem. Soc.</u> , 108:4984-4987 (1986)
/WWW/	C81	*Sears et al., "Engineering Enzymes for Bioorganic Synthesis. Peptide Bond Formation," <u>Biotechnol. Prog.</u> , 12:423-33 (1996)
/WWW/	C82	*Sears et al., "Engineering Subtilisin for Peptide Coupling: Studies on the Effects of Counterions and Site-Specific Modifications on the Stability and Specificity of the Enzyme," <u>J. Am. Chem. Soc.</u> , 116:6521-30 (1994)
/WWW/	C83	*Siddiqui et al., "Arthrobacter D-Xylose Isomerase: Chemical Modification of Carboxy Groups and Protein Engineering Of pH Optimum," <u>Biochem. J.</u> , 295:685-691 (1993)
/WWW/	C84	*Smith et al., "An Engineered Change in Substrate Specificity of Ribulosebiphosphate Carboxylase/Oxygenase," <u>The Journal of Biological Chemistry</u> , 265:1243-1245 (1990)
/WWW/	C85	*Smith et al., "Chemical Modification of Active Site Residues in γ -Glutamyl Transpeptidase," <u>The Journal of Biological Chemistry</u> , 270:12476-12480 (1995)
/WWW/	C86	*Smith et al., "Nonessentiality of the Active Sulfhydryl Group of Rabbit Muscle Creatine Kinase," <u>The Journal of Biological Chemistry</u> , 249:3317-3318 (1974)
/WWW/	C87	*Smith et al., "Restoration of Activity to Catalytically Deficient Mutants of Ribulosebiphosphate Carboxylase/Oxygenase by Aminoethylation," <u>The Journal of Biological Chemistry</u> , 263:4921-4925 (1988)
/WWW/	C88	*Smith et al., "Simple Alkanethiol Groups for Temporary Blocking of Sulfhydryl Groups of Enzymes," <u>Biochemistry</u> , 14:766-771 (1975)
/WWW/	C89	*Smith et al., "Subtle Alteration of the Active Site of Ribulose Biphosphate Carboxylase/Oxygenase by Concerted Site-Directed Mutagenesis and Chemical Modification," <u>Biochemical and Biophysical Research Communications</u> , 152:579-584 (1988)

EXAMINER /William W. Moore/

DATE CONSIDERED

03/11/2008

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant(s).



U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT
(Use several sheets if necessary)

(PTO-1449)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

~~1614~~ 1652

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C90	*So et al., "Lipase-Catalyzed Synthesis of Peptides Containing D-Amino Acid," <u>Enzyme Microb. Technol.</u> , 23:211-15 (1998)
/WWW/	C91	*Soper et al., "Effects of Substrates on the Selective Modification of the Cysteiny Residues of D-Amino Acid Transaminase," <u>The Journal of Biological Chemistry</u> , 254:10901-10905 (1979)
/WWW/	C92	*Spura, A., et al. "Probing Agonist Domain of the Nicotinic Acetylcholine Receptor by Cysteine Scanning Mutagenesis Reveals Residues in Proximity to the Alpha-Bungarotoxin Binding Site, <u>Biochemistry</u> , 20 Apr. 1999 Vol. 38:16 pp. 4912-4921
/WWW/	C93	*Stauffer et al., "Electrostatic Potential of the Acetylcholine Binding sites in the Nicotinic Receptor Probed by Reactions of Binding-Site Cysteines with Charged Methanethiosulfonates," <u>Biochemistry</u> , 33:6840-6849 (1994)
/WWW/	C94	*Stepanov, "Proteinases as Catalysts in Peptide Synthesis," <u>Pure & Appl. Chem.</u> , 68(6):1335-39 (1996)
/WWW/	C95	*Stewart et al., "Catalytic Oxidation of Dithiols by a Semisynthetic Enzyme," <u>J. Am. Chem. Soc.</u> , 108:3480-3483 (1986)
/WWW/	C96	*Suckling et al., "Carbon-Carbon Bond Formation Mediated by Papain Chemically Modified by Thiazolium Salts," <u>Bioorganic & Medicinal Chemistry Letters</u> , 3:531-534 (1993)
/WWW/	C97	*Svensson et al., "Mapping the Folding Intermediate of Human Carbonic Anhydrase II. Probing Substructure by Chemical Reactivity and Spin and Fluorescence Labelling of Engineered Cysteine Residues," <u>Biochemistry</u> , 34:8606-8620 (1995)
/WWW/	C98	*Valenzuela et al., "Kinetic Properties of Succinylated and Ethylenediamine-Amidated δ -Chymotrypsins," <u>Biochim. Biophys. Acta</u> , 250:538-548 (1971)
/WWW/	C99	*Watanabe, et al., "A Unique Enzyme from <i>Saccharothrix</i> sp. Catalyzing D-Amino Acid Transfer," <u>Biochimica et Biophysica Acta</u> , 1337:40-46 (1997)
/WWW/	C100	*West et al., "Enzyme-catalysed Synthesis of Peptides Containing D-Amino Acids, <u>J. Chem. Soc. Chem. Commun.</u> , pp 417-18 (1986)
/WWW/	C101	*West et al., "Enzyme-Catalyzed Irreversible Formation of Peptides Containing D-Amino Acids," <u>J. Org. Chem.</u> , 51:2728-35 (1986)
/WWW/	C102	*West et al., "Enzymes as Synthetic Catalysts: Mechanistic and Active-Site Considerations of Natural and Modified Chymotrypsin," <u>J. Am. Chem. Soc.</u> , 112:5313-5320 (1990)
/WWW/	C103	*West et al., "Modification of Proteases to Esterases for Peptide Synthesis: Methylchymotrypsin," <u>J. Am. Chem. Soc.</u> , 110:3709-10 (1988)
/WWW/	C104	*White et al., "Sequential Site-Directed Mutagenesis and Chemical Modification to Convert the Active Site Arginine 292 Of Aspartate Aminotransferase to Homoarginine," <u>Journal of the American Chemical Society</u> , 114:292-293 (1992)
/WWW/	C105	*Wong et al., "Enzymes in Organic Synthesis: use of Subtilisin and a Highly Stable Mutant Derived from Ulipite Site-Specific Mutations," <u>J. Am. Chem. Soc.</u> , 112:945-53 (1990)
/WWW/	C106	*Worku et al., "Identification of Histidyl and Cysteiny Residues Essential for Catalysis of 5'-Nucleotidase," <u>FEBS Letter</u> , 167:235-240 (1984)

EXAMINER /William W. Moore/

DATE CONSIDERED

03/11/2008

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant(s).



U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT
(Use several sheets if necessary)

(PTO-1449)

ATTY. DOCKET NO.

GC566-2-C1

SERIAL NO.

10/791,093

APPLICANT

Genencor International, Inc.

FILING DATE

March 1, 2004

GROUP ART UNIT

~~1614~~ 1652

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)

/WWW/	C107	*Wu et al., "Conversion of a Protease into an Acyl Transferase: Selenolsubtilisin," <u>J. Am. Chem. Soc.</u> , 111:4514-4515 (1989)
/WWW/	C108	*Wynn et al., "Chemical Modification of Protein Thiols: Formation of Mixed Disulfides," <u>Methods in Enzymology</u> , 251:351-356 (1995)
/WWW/	C109	*Wynn et al., "Comparison of Straight Chain and Cyclic Unnatural Amino Acids Embedded in the Core of Staphylococcal Nuclease," <u>Protein Science</u> , 6:1621-1626 (1997)
/WWW/	C110	*Wynn et al., "Mobile Unnatural Amino Acid Side Chains in the Core of Staphylococcal Nuclease," <u>Protein Science</u> , 5:1026-1031 (1996)
/WWW/	C111	*Wynn et al., "Unnatural Amino Acid Packing Mutants of <i>Escherichia Coli</i> Thioredoxin Produced by Combined Mutagenesis/Chemical Modification Techniques," <u>Protein Science</u> , 2:395-403 (1993)
/WWW/	C112	*Xu et al., "Amino Acids Lining the Channel of the γ -Am inobutyric Acid Type A Receptor Identified by Cysteine Substitution," <u>The Journal of Biological Chemistry</u> , 268:21505-21508 (1993)
/WWW/	C113	*Zhang et al., "Protease-catalyzed Small Peptide Synthesis in Organic Media," <u>Enzyme Microb. Technol.</u> , 19:538-44 (1996)

EXAMINER /William W. Moore/

DATE CONSIDERED

03/11/2008

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance *and* not considered. Include copy of this form with next communication to Applicant(s).